

Date: February 27, 2012
Subject: Microbiology Data Validation (Dimock – Week2)
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Overview

The Week 2 sample batch consists of 39 samples analyzed by Northeastern Environmental Laboratories, Inc., Scranton, PA, for the following parameters:

<u>Parameter</u>	<u>Analytical Method</u>
Total Coliforms (TC)	SM 9222B
Fecal Coliforms (FC)	SM 9222B + SM 9221E
Heterotrophic Bacteria Count (HPC)	SM 9215C

Data quality was reviewed based on the criteria set forth in *Standard Methods for the Examination of Water and Wastewater*, 20th Edition, and the *USEPA Manual for the Certification of Laboratories Analyzing Drinking Water*, 5th Edition, Chapter 5 – Critical Elements for Microbiology. Data quality problems are listed below.

Summary

There are several data quality issues associated with Week2 microbiology data. The total coliform and fecal coliform results for 24 of the samples contain no problems whatsoever. The results for 15 samples may be biased high although the detections are acceptable. HPC data for 32 samples must be rejected due to the absence of method blanks (sterility controls); the values for the remaining three HPC samples are estimated and possibly biased as indicated. Data qualifications are provided in Table 1 under Conclusions.

Data Quality Issues

1. TC/FC and HPC Transport Temperatures: For total coliforms, fecal coliforms, and HPC, the cooler transport temperature was in compliance with the <10°C requirement for 24 of the 39 samples. For the 15 samples out of compliance (highlighted in gray below), cooler temperature was not recorded on the COC. Without documentation of the transport temperature, it must be assumed samples were not adequately cooled during transport. Any quantitative results (TC/FC or HPC) from the highlighted samples may therefore be biased high. (Table is continued on next page.)

FB06	HW20	HW32	HW40
FB07	HW20-P	HW32-P	HW40-P
FB08	HW25-P	HW33	HW41
FB09	HW26	HW33A-P	HW41-P
FB10	HW26-P	HW33B-P	HW42
HW09	HW28A	HW34A	HW42Z

HW09-P	HW28A-P	HW34A-P	HW46
HW13	HW28B-P	HW35	HW46-P
HW18	HW29	HW39	HW52
HW18-P	HW29Z	HW39-P	

2. HPC Holding Times: Although the 30-hour holding time for total and fecal coliforms was met for all samples, the 8-hour holding time for HPC was exceeded for 30 of the 39 samples. Those samples exceeding the holding time are highlighted in gray below. Depending on other water quality factors an extended holding time may cause the number of bacteria present to increase, decrease, or remain unchanged. Results therefore may be biased high, low, or not affected.

FB06	HW20	HW32	HW40
FB07	HW20-P	HW32-P	HW40-P
FB08	HW25-P	HW33	HW41
FB09	HW26	HW33A-P	HW41-P
FB10	HW26-P	HW33B-P	HW42
HW09	HW28A	HW34A	HW42Z
HW09-P	HW28A-P	HW34A-P	HW46
HW13	HW28B-P	HW35	HW46-P
HW18	HW29	HW39	HW52
HW18-P	HW29Z	HW39-P	

3. HPC Method Blanks: A method blank (or R2A agar sterility control plate) is needed for each series of samples plated. One such control appears to have been used with one series of samples and generated a negative result (<1CFU/mL), but for all other series of HPC samples (highlighted below in gray), there is no record of a method blank with the raw data. Consequently, without a clean method blank showing no growth, the HPC results obtained could be due to agar contamination or contamination of a sample at the bench during analysis.

FB06	HW20	HW32	HW40
FB07	HW20-P	HW32-P	HW40-P
FB08	HW25-P	HW33	HW41
FB09	HW26	HW33A-P	HW41-P
FB10	HW26-P	HW33B-P	HW42
HW09	HW28A	HW34A	HW42Z
HW09-P	HW28A-P	HW34A-P	HW46
HW13	HW28B-P	HW35	HW46-P
HW18	HW29	HW39	HW52
HW18-P	HW29Z	HW39-P	

4. HPC Agar Positive Control: No agar batch positive control results were provided in the QC data package. Results for all samples (highlighted below in gray) are affected and may be biased low, especially results indicating <1 CFU/mL.

FB06	HW20	HW32	HW40
FB07	HW20-P	HW32-P	HW40-P
FB08	HW25-P	HW33	HW41
FB09	HW26	HW33A-P	HW41-P
FB10	HW26-P	HW33B-P	HW42
HW09	HW28A	HW34A	HW42Z
HW09-P	HW28A-P	HW34A-P	HW46
HW13	HW28B-P	HW35	HW46-P
HW18	HW29	HW39	HW52
HW18-P	HW29Z	HW39-P	

Conclusions

Table 1. presents the final data qualifications for Week 2 samples where they apply. The number in parentheses corresponds to the data quality issue discussed above. (The numbers are not related to issues listed in other data validation reports.)

Table 1. Data Qualifiers (continued on next page)

SAMPLE	QUALIFIERS for TC/FC DATA	QUALIFIERS for HPC DATA
FB06	K(1)	K(1), J(2), L(4)
FB07		R (3)
FB08		R (3)
FB09		R (3)
FB10	K(1)	R (3)
HW09	K(1)	R (3)
HW09-P	K(1)	R (3)
HW13	K(1)	K(1), J(2), L(4)
HW18	K(1)	K(1), J(2), L(4)
HW18-P	K(1)	K(1), J(2), L(4)
HW20	K(1)	K(1), J(2), L(4)
HW20-P	K(1)	K(1), J(2), L(4)
HW25-P	K(1)	K(1), J(2), L(4)
HW26		R (3)
HW26-P		R (3)

HW28A	K(1)	R (3)
HW28A-P	K(1)	R (3)
HW28B-P	K(1)	R (3)
HW29		R (3)
HW29Z		R (3)
HW32		R (3)
HW32-P		R (3)
HW33		R (3)
HW33A-P		R (3)
HW33B-P		R (3)
HW34A		R (3)
HW34A-P		R (3)
HW35		R (3)
HW39	K(1)	R (3)
HW39-P	K(1)	R (3)
HW40		R (3)
HW40-P		R (3)
HW41		R (3)
HW41-P		R (3)
HW42		R (3)
HW42Z		R (3)
HW46		R (3)
HW46P		R (3)
HW52		R (3)